

What is claimed is:

1 1. A location system for locating a plurality of mobile terminals,
2 comprising:

3 a communication terminal for transmitting a location request
4 specifying a target mobile terminal and a type of location information; and
5 a location network responsive to said location request from said
6 communication terminal for producing current location information of the
7 target mobile terminal if the type of location information of the received
8 request specifies current location information and transmitting the current
9 location information to said communication terminal and storing the last
10 known location information in a memory as last known location information
11 of the target mobile terminal, and copying stored last known location
12 information of the target mobile terminal from the memory if said type of
13 location information specifies last known location information and
14 transmitting the copied information to said communication terminal.

1 2. The location system of claim 1, wherein said location network
2 performs a reusability test on the stored last known location information and
3 transmits said last known location information if the reusability test indicates
4 a favorable result and transmits said current location information if the
5 reusability test indicates an unfavorable result.

1 3. The location system of claim 2, wherein said location request
2 contains a parameter of last known location information, and wherein said
3 location network performs said reusability test by using said parameter.

1 4. The location system of claim 2, wherein said parameter
2 represents one of age and accuracy of last known location information.

1 5. The location system of claim 1, wherein said location network
2 maintains privacy profile of the target mobile terminal, uses the privacy
3 profile to perform a privacy check on said location request and transmits said
4 last known location information if the privacy check indicates a favorable
5 result.

1 6. The location system of claim 5, wherein said location network
2 transmits a notification message to the target mobile terminal according to
3 said privacy profile before transmitting said last known location information
4 to said communication terminal.

1 7. The location system of claim 1, wherein said location network
2 transmits a verification message to the target mobile terminal according to
3 said privacy profile and transmits said last known location information to the
4 communication terminal when the location system receives a verification
5 report from the target mobile terminal which indicates that the location
6 request is verified by the target mobile terminal.

1 8. The location system of claim 1, wherein said communication
2 terminal is a client terminal.

1 9. The location system of claim 1, wherein said communication
2 terminal is a mobile terminal which represents one of said plurality of mobile
3 terminals.

1 10. The location system of claim 9, wherein said location network is
2 responsive to said location request from one of said mobile terminals for
3 producing current location information of a target mobile terminal if the type
4 of location information specifies current location information and
5 transmitting the current location information to said one mobile terminal and

6 storing the last known location information in a memory as last known
7 location information of the target mobile terminal, and copying last known
8 location information of the target mobile terminal from the memory if said
9 type of location information specifies last known location information and
10 transmitting the copied information to said one mobile terminal.

1 11. The location system of claim 1, wherein said location network
2 comprises:

3 a plurality of gateways for receiving said location request from said
4 communication terminal, each of said gateways storing last known location
5 information of home mobile terminals, said location request further
6 containing a parameter of last known location information;

7 a plurality of registers associated respectively with said gateways; and
8 a plurality of wireless networks connected to said gateways for
9 establishing wireless links to said mobile terminals,

10 each of said gateways being responsive to a location request from said
11 communication terminal specifying one of said home mobile terminals as a
12 target mobile terminal, (a) transmitting a copy of the stored last known
13 location information of the target mobile terminal to the communication
14 terminal if the type of location information of the location request specifies
15 last known location information and if said parameter of last known location
16 information is met by the stored last known location information, and (b)
17 acquiring a node identifier from the associated register if said parameter is
18 not met by the stored last known location information, acquiring current
19 location information of the target mobile terminal from one of said wireless
20 networks specified by the acquired node identifier and transmitting the
21 acquired current location information to the communication terminal.

1 12. The location system of claim 11, wherein each of said gateways
2 maintains privacy profiles of the home mobile terminals, and wherein each of

3 the gateways transmits said copy of stored last known location information if
4 said location request meets the privacy profile of the target mobile terminal.

1 13. The location system of claim 11, wherein said location network
2 further comprises a plurality of privacy profile registers associated
3 respectively with said gateways for storing privacy profiles of home mobile
4 terminals of the associated gateway,

5 each of said gateways transmitting a request to the associated privacy
6 profile register in response to receipt of said location request for requesting
7 the associated register to make a decision as to whether the location request
8 meets the privacy profile of the target mobile terminal, receiving a report
9 indicating said decision, and transmitting said copy of last known location
10 information if said decision is favorable.

1 14. The location system of claim 1, wherein said location network
2 comprises:

3 a plurality of gateways for receiving said location request from said
4 communication terminal, said location request further containing a parameter
5 of last known location information;

6 a plurality of registers associated respectively with said gateways;
7 a plurality of wireless networks connected to said gateways for
8 establishing wireless links to said mobile terminals, each of said wireless
9 networks storing last known location information of home mobile terminals,
10 each of said gateways being responsive to a location request from said
11 communication terminal specifying one of said home mobile terminals as a
12 target mobile terminal, (a) acquiring a node identifier from the associated
13 register, acquiring last known location information of the target mobile
14 terminal from one of said wireless networks specified by the acquired node
15 identifier if the type of location information of the location request specifies
16 last known location information and if said parameter of last known location

17 information is met by the stored last known location information, and (b)
18 acquiring current location information of the target mobile terminal from said
19 specified wireless network if said parameter is not met by the stored location
20 information and transmitting the acquired current location information to the
21 communication terminal.

1 15. The location system of claim 1, wherein said location network
2 comprises:

3 a gateway including receive means for receiving a location request
4 from a communication terminal, said request specifying a target mobile
5 terminal and a type of location information; and

6 a wireless network including:

7 a memory;
8 control means for receiving the location request from said gateway
9 and producing current location information of the target mobile terminal if
10 the type of location information of the received request specifies current
11 location information and storing the acquired current location information in
12 said memory as last known location information of the target mobile
13 terminal, and reading the stored last known location information of the target
14 mobile terminal from said memory if said type of location information
15 specifies last known location information; and

16 transmit means for transmitting, to said gateway, a copy of the
17 acquired current location information or a copy of the last known location
18 information read from said memory, depending on said type of last known
19 location information,

20 said gateway further including transmit means for repeating said copy
21 of current location information or last known location information to said
22 communication terminal.

1 16. The location system of claim 15, wherein said location request

2 further contains a parameter of last known location information, and a
3 privacy profile of said target mobile terminal is stored in said memory,
4 wherein said control means includes reusability check means for
5 performing a reusability test by checking said parameter with the stored
6 privacy profile when said type of location information specifies last known
7 location information and reading the stored last known location information
8 from said memory when said reusability test indicates a favorable result.

1 17. The location system of claim 15, wherein said privacy profile
2 indicates whether or not notification is required for notifying that the target
3 mobile terminal is being accessed, and wherein said control means further
4 includes notification means for transmitting a notification message to said
5 target mobile terminal prior to the transmission of said last known location
6 information to said communication terminal if said privacy profile of said
7 target mobile terminal requires notification.

1 18. The location system of claim 15, wherein said privacy profile
2 indicates whether or not the location request is verified by the target mobile
3 terminal, and wherein said control means further includes verification means
4 for transmitting a verification message to said target mobile terminal and
5 receiving a verification report from the target mobile terminal prior to the
6 transmission of said last known location information to said gateway if said
7 privacy profile of said target mobile terminal indicates that verification by the
8 target mobile terminal is required, and transmitting said copy of last known
9 location information to said gateway if said verification report indicates a
10 favorable result.

1 19. A location system comprising:
2 a communication terminal (101) for transmitting a location request
3 specifying a target mobile terminal, a type of location information, and a

4 parameter of last known location information;

5 a gateway (102) for storing last known location information of home

6 mobile terminals and privacy profiles of the mobile terminals; and

7 a plurality of wireless networks (103, 104) for establishing a wireless

8 link to mobile terminals,

9 said gateway (102) being responsive to said location request for

10 performing a reusability test by checking said parameter with the privacy

11 profile of the target mobile terminal if said type specifies last known location

12 information, acquiring a node identifier from an associated register and

13 current location information of the target mobile terminal from one of said

14 wireless networks specified by said node identifier if said reusability test

15 indicates an unfavorable result, transmitting the current location information

16 from the gateway to the communication terminal, and storing the current

17 location information in a memory as last known location information of said

18 target mobile terminal,

19 said gateway transmitting a copy of last known location information of

20 the target mobile terminal to the communication terminal if said reusability

21 test indicates a favorable result.

1 20. A location system comprising:

2 a communication terminal (101) for transmitting a location request

3 specifying a target mobile terminal, a type of location information, and a

4 parameter of last known location information;

5 a gateway (102);

6 a register (106); and

7 a plurality of wireless networks (103, 104) for establishing a wireless

8 link to mobile terminals and storing privacy profiles and location information

9 of said mobile terminals,

10 said gateway (102) being responsive to said location request for (a)

11 acquiring a node identifier from said register (106) if said type specifies last

12 known location information, (b) authorizing one of a plurality of wireless
13 networks specified by the node identifier to perform a reusability test by
14 checking said parameter with the privacy profile of the target mobile
15 terminal, (c) acquiring from current location information of the target mobile
16 terminal from said one wireless network, and storing the current location
17 information in a memory, and (d) acquiring a copy of the last known location
18 information of the target mobile terminal from said one wireless network if
19 said reusability test indicates a favorable result or a copy of the current
20 location information if said reusability test indicates an unfavorable result
21 and transmitting the copy of the last known location information or current
22 location information to said communication terminal.

1 21. The location system of claim 20, wherein one of said mobile
2 terminals transmits a location request specifying a target mobile terminal, a
3 type of location information and a parameter of last known location
4 information,

5 one of said wireless networks being responsive to a location request
6 from said one mobile terminal for (a) performing a reusability test by
7 checking said parameter with the privacy profile of the target mobile terminal
8 if said type specifies last known location information, (b) producing current
9 location information of the target mobile terminal if said reusability test
10 indicates an unfavorable result, (c) transmitting the current location
11 information to the requesting mobile terminal, (d) storing the current location
12 information in a memory as last known location information of said target
13 mobile terminal, and (e) transmitting a copy of last known location
14 information of the target mobile terminal to the requesting mobile terminal if
15 said reusability test indicates a favorable result.

1 22. A location system comprising:
2 a communication terminal (111) for transmitting a location request

3 specifying a target mobile terminal, a type of location information, and a
4 parameter of last known location information;
5 a first gateway (112);
6 a second gateway (102) for storing last known location information of
7 home mobile terminals and privacy profiles of the mobile terminals;
8 first and second registers (116, 106) respectively associated with said
9 first and second gateways; and
10 a plurality of wireless networks (103, 104) for establishing a wireless
11 link to mobile terminals,
12 said first gateway (112) being responsive to said location request from
13 said communication terminal for acquiring a node identifier specifying said
14 second gateway from said first register (116), and transmitting said location
15 request to said second gateway (102);
16 said second gateway (102) being responsive to the location request
17 from the first gateway for (a) performing a reusability test by checking said
18 parameter with the privacy profile of the target mobile terminal if said type
19 of location information specifies last known location information, (b)
20 acquiring a node identifier from said second register (106) and current
21 location information of the target mobile terminal from one of said plurality
22 of wireless networks specified by the node identifier if said reusability test
23 indicates an unfavorable result, (c) transmitting the current location
24 information to the communication terminal via the first gateway, (d) storing
25 the current location information in a memory as last known location
26 information of said target mobile terminal, and (e) transmitting a copy of last
27 known location information of the target mobile terminal to the
28 communication terminal via the first gateway (112) if said reusability test
29 indicates a favorable result.

1 23. The location system of claim 22, further comprising a third
2 gateway (122) which, when visited by said target mobile terminal, operates as

3 a repeater node between said one wireless network (123, 124) and said second
4 gateway (102) for repeating said current location information.

1 24. The location system of claim 19, further comprising a second
2 gateway (112) which, when visited by said target mobile terminal, operates as
3 a repeater node between said one wireless network (113, 114) and said first
4 gateway (102) for repeating said current location information.

1 25. The location system of claim 22, wherein said first gateway
2 (112) operates as a repeater node between said second gateway (102) and said
3 one wireless network (103, 104) for repeating said current location
4 information.

1 26. A location system comprising:
2 a communication terminal (101) for transmitting a location request
3 specifying a target mobile terminal, a type of location information, and a
4 parameter of last known location information;
5 a gateway (102);
6 a privacy profile register (107) for storing privacy profiles and location
7 information of mobile terminals;
8 a home location register (106); and
9 a wireless network (103, 104) for establishing a wireless link to said
10 mobile terminals,
11 said gateway being responsive to said location request for (a)
12 authorizing said privacy profile register to perform a reusability test by
13 checking said parameter with the privacy profile of the target mobile terminal
14 if said type specifies last known location information, (b) receiving a report of
15 said reusability test from said privacy profile register, (c) acquiring a node
16 identifier from said home location register and current location information
17 of the target mobile terminal from one of a plurality of wireless networks

18 specified by said node identifier if said report indicates that said reusability
19 test indicates an unfavorable result, (d) transmitting the current location
20 information from the gateway to the communication terminal, (e) storing the
21 current location information in a memory of said privacy profile register as
22 last known location information of said target mobile terminal, and (f)
23 transmitting a copy of last known location information of the target mobile
24 terminal to the communication terminal if said report indicates that said
25 reusability test indicates a favorable result.

1 27. A location system comprising:
2 a communication terminal (101) for transmitting a location request
3 specifying a target mobile terminal and a type of location information;
4 a gateway (102) for storing last known location information of home
5 mobile terminals;
6 a home location register (106);
7 a privacy profile register (107) for storing privacy profiles of the
8 mobile terminals; and
9 a plurality of wireless networks (103, 104) for establishing a wireless
10 link to mobile terminals,
11 said gateway being responsive to said location request for (a)
12 authorizing said privacy profile register to perform a privacy check with the
13 privacy profile of the target mobile terminal if said type specifies last known
14 location information, (b) receiving a report of the privacy check from said
15 privacy profile register, (c) acquiring a node identifier from said home
16 location register and current location information of the target mobile
17 terminal from one of said wireless networks specified by said node identifier
18 if said report indicates that said privacy check indicates an unfavorable
19 result, (d) transmitting the current location information from the gateway to
20 the communication terminal, (e) storing the current location information in a
21 memory as last known location information of said target mobile terminal,

22 and (f) transmitting a copy of last known location information of the target
23 mobile terminal to the communication terminal if said report indicates that
24 said privacy check indicates a favorable result.

1 28. A location system comprising:
2 a communication terminal (111) for transmitting a location request
3 specifying a target mobile terminal, a type of location information, and a
4 parameter of last known location information;
5 first and second gateways (112, 102);
6 first and second home location registers (116, 106) respectively
7 associated with said first and second gateways;
8 a privacy profile register (107) associated with said second gateway
9 (102) for storing last known location information of home mobile terminals
10 and privacy profiles of the mobile terminals; and
11 a plurality of wireless networks (103, 104) for establishing a wireless
12 link to mobile terminals,
13 said first gateway (112) being responsive to said location request from
14 said communication terminal for acquiring a node identifier specifying said
15 second gateway (102) from said first home location register (116), and
16 transmitting said location request to said second gateway (102);
17 said second gateway (102) being responsive to the location request
18 from the first gateway (112) for authorizing the privacy profile register (107)
19 to perform a reusability test by checking said parameter with the privacy
20 profile of the target mobile terminal if said type of location information
21 specifies last known location information and produce a report indicating a
22 result of the reusability test,
23 said second gateway (102) being responsive to said report for
24 acquiring a node identifier from said second home location register (106) and
25 current location information of the target mobile terminal from one of said
26 plurality of wireless networks specified by the node identifier if said report

27 indicates that the result of the reusability test is unfavorable, transmitting the
28 current location information to the communication terminal via the first
29 gateway (112), and storing the current location information in a memory as
30 last known location information of said target mobile terminal, and
31 transmitting a copy of last known location information of the target mobile
32 terminal to the communication terminal via the first gateway (112) if said
33 report indicates that the result of the reusability test is favorable.

1 29. A location system comprising:
2 a communication terminal (111) for transmitting a location request
3 specifying a target mobile terminal, a type of location information, and a
4 parameter of last known location information;
5 a first gateway (112);
6 a second gateway (102) for storing last known location information of
7 home mobile terminals;
8 first and second home location registers (116, 106) respectively
9 associated with said first and second gateways;
10 a privacy profile register (107) associated with said second gateway
11 (102) for storing privacy profiles of the mobile terminals; and
12 a plurality of wireless networks (103, 104) for establishing a wireless
13 link to mobile terminals,
14 said first gateway (112) being responsive to said location request from
15 said communication terminal for acquiring a node identifier specifying said
16 second gateway (102) from said first home location register (116), and
17 transmitting said location request to said second gateway (102);
18 said second gateway (102) being responsive to the location request
19 from the first gateway (112) for authorizing the privacy profile register (107)
20 to perform a privacy check with the privacy profile of the target mobile
21 terminal to produce a report of the privacy check,
22 said second gateway (102) being responsive to said report for

23 performing a reusability test by checking said parameter with the privacy
24 profile of the target mobile terminal if said type of location information
25 specifies last known location information and if the result of said privacy
26 check is favorable,

27 said second gateway (102) acquiring a node identifier from said second
28 home location register (106) and current location information of the target
29 mobile terminal from one of said plurality of wireless networks specified by
30 the node identifier if said reusability test indicates an unfavorable result,
31 transmitting the current location information to the communication terminal
32 via the first gateway (112), and storing the current location information in a
33 memory as last known location information of said target mobile terminal,
34 and transmitting a copy of last known location information of the target
35 mobile terminal to the communication terminal via the first gateway (112) if
36 said reusability test indicates a favorable result.

1 30. The location system of claim 28, further comprising a third
2 gateway (122) which, when visited by said target mobile terminal, operates as
3 a repeater node between said second gateway (102) and said one wireless
4 network (123, 124) for repeating said current location information.

1 31. The location system of claim 29, further comprising a third
2 gateway (122) which, when visited by said target mobile terminal, operates as
3 a repeater node between said second gateway (102) and said one wireless
4 network (123, 124) for repeating said current location information.

1 32. The location system of claim 26, further comprising a second
2 gateway (112) which, when visited by said target mobile terminal, operates as
3 a repeater node between said first gateway (102) and said one wireless
4 network (113, 114) for repeating said current location information.

1 33. The location system of claim 27, further comprising a second
2 gateway (112) which, when visited by said target mobile terminal, operates as
3 a repeater node between said first gateway (102) and said one wireless
4 network (113, 114) for repeating said current location information.

1 34. The location system of claim 28, wherein said first gateway
2 (112) operates as a repeater node between said second gateway (102) and said
3 one wireless network (113, 114) for repeating said current location
4 information.

1 35. The location system of claim 28, wherein said first gateway
2 (112) operates as a repeater node between said second gateway (102) and said
3 one wireless network (113, 114) for repeating said current location
4 information.

1 36. A gateway for operating with a location network to which
2 mobile terminals are wirelessly connected, comprising:
3 receive means for receiving a location request from a communication
4 terminal, said request specifying a target mobile terminal and a type of
5 location information;
6 a memory;
7 control means for acquiring current location information of the target
8 mobile terminal from said location network if the type of location information
9 of the received request specifies current location information and storing the
10 acquired current location information in said memory as last known location
11 information of the target mobile terminal, and reading the stored last known
12 location information of the target mobile terminal from said memory if said
13 type of location information specifies last known location information; and
14 transmit means for transmitting, to said communication terminal, a
15 copy of the acquired current location information or a copy of the last known

16 location information read from said memory, depending on said type of last
17 known location information.

1 37. The gateway of claim 36, wherein said location request further
2 contains a parameter of last known location information, and a privacy
3 profile of said target mobile terminal is stored in said memory,
4 wherein said control means includes reusability check means for
5 performing a reusability test by checking said parameter with the stored
6 privacy profile when said type of location information specifies last known
7 location information and reading the stored last known location information
8 from said memory when said reusability test indicates a favorable result.

1 38. The gateway of claim 36, wherein said privacy profile indicates
2 whether or not notification is required for notifying that the target mobile
3 terminal is being accessed, and wherein said control means further includes
4 notification means for transmitting a notification message to said target
5 mobile terminal prior to the transmission of said last known location
6 information to said communication terminal if said privacy profile of said
7 target mobile terminal requires notification.

1 39. The gateway of claim 36, wherein said privacy profile indicates
2 whether or not the location request is verified by the target mobile terminal,
3 and wherein said control means further includes verification means for
4 transmitting a verification message to said target mobile terminal and
5 receiving a verification report from the target mobile terminal prior to the
6 transmission of said last known location information to said communication
7 terminal if said privacy profile of said target mobile terminal indicates that
8 verification by the target mobile terminal is required, and transmitting said
9 copy of last known location information to said communication terminal if
10 said verification report indicates a favorable result.

1 40. A location method comprising the steps of:
2 a) transmitting a location request from a communication terminal,
3 said request specifying a target mobile terminal and a type of location
4 information;
5 b) receiving the location request at a location network;
6 c) producing current location information of the target mobile
7 terminal and transmitting the current location information from the location
8 network to said communication terminal if the type of location information of
9 the received request specifies current location information;
10 d) storing the current location information in a memory as last
11 known location information of the target mobile terminal; and
12 e) copying the stored last known location information of the target
13 mobile terminal from said memory if said type of location information
14 specifies last known location information and transmitting the copied
15 information from the location network to said communication terminal.

1 41. The location method of claim 40, wherein step (e) comprises the
2 steps of performing a reusability test on said stored last known location
3 information and transmitting said last known location information if said
4 reusability test indicates a favorable result.

1 42. The location method of claim 41, wherein step (e) further
2 comprises the steps of:
3 if said reusability test indicates an unfavorable result, producing
4 current location information of the target mobile terminal and transmitting
5 the current location information from the location network to said
6 communication terminal; and
7 storing the current location information in said memory as last known
8 location information of the target mobile terminal.

1 43. The location method of claim 41, wherein said location request
2 contains a requested age of last known location information, and wherein
3 step (e) comprises the steps of performing said reusability test by using said
4 requested age and transmitting said copy of the stored last known location
5 information if the stored last known location information meets said
6 requested age.

1 44. The location method of claim 41, wherein said location request
2 contains a requested age of last known location information, and wherein
3 step (e) comprises the steps of:

4 performing said reusability test by using said requested age;
5 producing current location information of the target mobile terminal
6 and transmitting the current location information from the location network
7 to said communication terminal if the type of location information of the
8 received request specifies current location information if said reusability test
9 indicates that the stored last known information fails to meet the requested
10 age; and

11 storing the current location information in said memory as last known
12 location information of the target mobile terminal.

1 45. The location method of claim 40, wherein said location network
2 maintains privacy profile of the target mobile terminal, and wherein step (e)
3 comprises the steps of transmitting a notification message to the target mobile
4 terminal according to said privacy profile, before transmitting said last
5 known location information to the communication terminal.

1 46. The location method of claim 40, wherein said location network
2 maintains privacy profile of the target mobile terminal, and wherein step (e)
3 comprises the steps of transmitting a verification message to the target mobile
4 terminal according to said privacy profile and transmitting said last known

5 location information if a verification report from the target mobile terminal
6 indicates that the location request is verified by the target mobile terminal.

1 47. The location method of claim 40, wherein said location network
2 produces and transmits current location information of said target mobile
3 terminal to said communication terminal if the stored location information of
4 the target mobile terminal is not available and said type of location
5 information indicates that current location information can be used instead of
6 last known location information.

1 48. The location method of claim 40, wherein said communication
2 terminal is a client terminal.

1 49. The location method of claim 40, wherein said communication
2 terminal is a mobile terminal which represents one of said plurality of mobile
3 terminals.

1 50. The location method of claim 48, further comprising the steps
2 of:

3 transmitting a location request from one of said mobile terminals, said
4 request specifying a target mobile terminal and a type of location
5 information;

6 receiving said location request at said location network;
7 producing current location information of a target mobile terminal and
8 transmitting the current location information from said location network to
9 said one mobile terminal if the type of location information specifies current
10 location information;

11 storing the current location information in a memory as last known
12 location information of the target mobile terminal; and

13 copying the last known location information of the target mobile

14 terminal from said memory if said type of location information specifies last
15 known location information and transmitting the copied information from
16 said location network to said one mobile terminal.

1 51. The location method of claim 40, wherein step (b) comprises the
2 steps of performing a privacy check of the location request and performing
3 steps (c) to (e) if said privacy check indicates a favorable result.

1 52. A method of operating a gateway with a location network,
2 comprising the steps of:

3 a) receiving a location request from a communication terminal,
4 said request specifying a target mobile terminal and a type of location
5 information;
6 b) acquiring current location information of the target mobile
7 terminal from said location network and transmitting the current location
8 information to said communication terminal if the type of location
9 information of the received request specifies current location information;
10 c) storing the current location information in a memory as last
11 known location information of the target mobile terminal; and
12 d) transmitting a copy of the stored last known location
13 information of the target mobile terminal to said communication terminal if
14 said type of location information specifies last known location information.

1 53. The method of claim 52, wherein step (d) comprises the steps of
2 performing a reusability test on said stored last known location information
3 and transmitting said last known location information if said reusability test
4 indicates a favorable result.

1 54. The method of claim 53, wherein step (d) further comprises the
2 steps of:

3 **if said reusability test indicates an unfavorable result, producing**
4 **current location information of the target mobile terminal and transmitting**
5 **the current location information from the location network to said**
6 **communication terminal; and**

7 **storing the current location information in said memory as last known**
8 **location information of the target mobile terminal.**

1 55. **The method of claim 53, wherein said location request contains**
2 **a parameter of last known location information, and wherein step (d)**
3 **comprises the steps of performing said reusability test by using said**
4 **parameter and transmitting said last known location information if the**
5 **reusability test indicates a favorable result.**

1 56. **The method of claim 55, wherein said parameter represents one**
2 **of age and accuracy of last known location information.**

1 57. **The method of claim 52, wherein said location network**
2 **maintains privacy profile of the target mobile terminal, and wherein step (d)**
3 **comprises the step of transmitting a notification message to the target mobile**
4 **terminal according to said privacy profile before said last known location**
5 **information is transmitted to the communication terminal.**

1 58. **The method of claim 52, wherein said location network**
2 **maintains privacy profile of the target mobile terminal, and wherein step (d)**
3 **comprises the steps of transmitting a verification message to the target mobile**
4 **terminal according to said privacy profile and transmitting said last known**
5 **location information if a verification report from the target mobile terminal**
6 **indicates that the location request is verified by the target mobile terminal.**

1 59. **The method of claim 52, wherein step (a) comprises the steps of**

2 performing a privacy check of the location request and performing steps (b)
3 to (d) if said privacy check indicates a favorable result.

1 60. A communication terminal comprising:
2 transmit means for transmitting a location request to a location system
3 in which last known location information of mobile terminals are stored, said
4 location request specifying a target mobile terminal and a type of last known
5 location information; and
6 receive means for receiving from said location system a copy of
7 current location information of the target mobile terminal if said type
8 specifies current location information or a copy of last known location
9 information of the target mobile terminal if said type specifies last known
10 location information.

1 61. The communication terminal of claim 60, wherein said location
2 request further specifies a parameter of last known location information.

1 62. The communication terminal of claim 61, wherein said
2 parameter represents one of age and accuracy of stored last known location
3 information.

1 63. The communication terminal of claim 60, further comprising:
2 a memory for storing the current location information received from
3 said location system as last known location information of said target mobile
4 terminal; and
5 control means performing a reusability test on the last location
6 information stored in said memory in response to a request from a user,
7 displaying the last known location information if the reusability test indicates
8 a favorable result.

1 64. A computer readable storage medium storing a program of
2 operating a gateway with a location network, said program comprising the
3 steps of:

4 a) receiving a location request from a communication terminal,
5 said request specifying a target mobile terminal and a type of location
6 information;

7 b) acquiring current location information of the target mobile
8 terminal from said location network and transmitting the current location
9 information to said communication terminal if the type of location
10 information of the received request specifies current location information;

11 c) storing the current location information in a memory as last
12 known location information of the target mobile terminal; and

13 d) transmitting a copy of the stored last known location
14 information of the target mobile terminal to said communication terminal if
15 said type of location information specifies last known location information.

1 65. The computer readable storage medium of claim 64, wherein
2 step (d) comprises the steps of performing a reusability test on said stored
3 last known location information and transmitting said last known location
4 information if said reusability test indicates a favorable result.

1 66. The computer readable storage medium of claim 64, wherein
2 step (d) further comprises the steps of:

3 if said reusability test indicates an unfavorable result, producing
4 current location information of the target mobile terminal and transmitting
5 the current location information from the location network to said
6 communication terminal; and

7 storing the current location information in said memory as last known
8 location information of the target mobile terminal.

1 67. The computer readable storage medium of claim 64, wherein
2 said location request contains a parameter of last known location information,
3 and wherein step (d) comprises the steps of performing said reusability test
4 by using said parameter and transmitting said last known location
5 information if the reusability test indicates a favorable result.

1 68. The computer readable storage medium of claim 67, wherein
2 said parameter represents one of age and accuracy of last known location
3 information.

1 69. The computer readable storage medium of claim 64, wherein
2 said location network maintains privacy profile of the target mobile terminal,
3 and wherein step (d) comprises the step of transmitting a notification
4 message to the target mobile terminal according to said privacy profile before
5 said last known location information is transmitted to the communication
6 terminal.

1 70. The computer readable storage medium of claim 64, wherein
2 said location network maintains privacy profile of the target mobile terminal,
3 and wherein step (d) comprises the steps of transmitting a verification
4 message to the target mobile terminal according to said privacy profile and
5 transmitting said last known location information if a verification report from
6 the target mobile terminal indicates that the location request is verified by the
7 target mobile terminal.

1 71. The computer readable storage medium of claim 64, wherein
2 step (a) comprises the steps of performing a privacy check of the location
3 request and performing steps (b) to (d) if said privacy check indicates a
4 favorable result.